



Case of the Glitch Phantom

Grade 10 math · Pythagorean theorem, Square roots, Exponents, Order of operations · Reading level grades 7-9

Detective: _____ **Date:** _____

During the championship finals on NEXUS-7, the Game Master vanished mid-match and the scoreboard froze on a corrupted screen. A laughing voice promised the server would stay broken forever. Twenty-four players were logged in, and one of them is the Glitch Phantom.

1. Solve each math problem. The answer is a number, and the letter beside it is what that number stands for.
2. In the clue boxes, write that letter in every box showing the same number, then read the secret clue.
3. Use each clue to cross suspects off the list. The one suspect left at the end is the culprit!

My answer: the Glitch Phantom is _____

Possible suspects

Cross off a row as each clue rules it out. The one left at the end is the culprit.

NAME	SIGNATURE MOVE	HACK	INPUT DEVICE	AVATAR GLOW	WEAKNESS
NeonNyx	Speedrun dash	Wall clip	plays on keyboard	electric blue glow	overheats fast
RogueRender	Stealth cloak	Wall clip	plays on keyboard	neon green glow	needs low ping
ComboKai	Shield bash	Lag switch	plays on keyboard	electric blue glow	overheats fast
PixiePower	Shield bash	Aimbot lock	plays on keyboard	electric blue glow	needs low ping
SilentSpark	Sniper headshot	Aimbot lock	plays on keyboard	neon green glow	overheats fast
PixelByte	Sniper headshot	No clip flight	plays on keyboard	electric blue glow	overheats fast
MegaMilo	Sniper headshot	Duplication glitch	plays on keyboard	hot pink glow	needs low ping
TurboTina	Shield bash	No clip flight	plays on controller	electric blue glow	overheats fast
MaxModem	Speedrun dash	Wall clip	plays on controller	hot pink glow	runs out of mana
VoltViper	Combo juggle	Duplication glitch	plays on controller	neon green glow	needs low ping
LunaLoot	Speedrun dash	Lag switch	plays on controller	neon green glow	overheats fast
OrionFrame	Combo juggle	Wall clip	plays on controller	neon green glow	runs out of mana
QuickScope	Combo juggle	Aimbot lock	plays on keyboard	electric blue glow	overheats fast
Cyra Volt	Shield bash	Duplication glitch	plays on controller	hot pink glow	needs low ping
ShadowFrag	Speedrun dash	Duplication glitch	plays on keyboard	neon green glow	runs out of mana
DashDante	Shield bash	Aimbot lock	plays on controller	electric blue glow	runs out of mana
ByteRider	Stealth cloak	Duplication glitch	plays on keyboard	hot pink glow	runs out of mana
RexRespawn	Speedrun dash	Aimbot lock	plays on keyboard	electric blue glow	overheats fast
JadeJoystick	Shield bash	Aimbot lock	plays on controller	neon green glow	runs out of mana
NovaStrike	Sniper headshot	Wall clip	plays on keyboard	neon green glow	runs out of mana
GlitchMancer	Combo juggle	Lag switch	plays on keyboard	neon green glow	runs out of mana

CLUE 1 Pythagorean theorem

The Phantom bolted diagonally from one corner of the arena grid to the other. Measure the two straight sides of the map and work out the diagonal it leaped along to see which exit it used.

Solve each problem, then write its letter in every clue box that shows the same number.

legs 12 and 35, hypotenuse = $\rightarrow$ **T**

legs 15 and 36, hypotenuse = $\rightarrow$ **V**

legs 16 and 30, hypotenuse = → **A**

legs 20 and 21, hypotenuse = $\rightarrow$ **E**

legs 28 and 96, hypotenuse = →

legs 25 and 60, hypotenuse = → **N**

legs 24 and 45, hypotenuse = $\rightarrow$ **L**

legs 9 and 40, hypotenuse = → **C**

legs 35 and 120, hypotenuse = $\rightarrow$ **W**

legs 8 and 15, hypotenuse = $\rightarrow$

legs 12 and 16, hypotenuse = $\rightarrow$ **S**

legs 6 and 8, hypotenuse = → **G**

legs 18 and 80, hypotenuse = → **H**

Scratch space:

CLUE 2 Square roots

The server logs only stored the attack power as a squared value. Take its square root to read the real damage number that points to the suspect.

Solve each problem, then write its letter in every clue box that shows the same number.

A									A					
25	16	17	4	5	15	7	7	7	25	16	4	18	15	
		A							A					
19	18	25	5	4	8	24	19	21	25	3	8	5		
					A									
13	15	3	12	8	25	20	2							

$$\sqrt{625} = \square \rightarrow \text{A}$$

$$\sqrt{225} = \square \rightarrow \text{E}$$

$$\sqrt{441} = \square \rightarrow \text{L}$$

$$\sqrt{144} = \square \rightarrow \text{B}$$

$$\sqrt{4} = \square \rightarrow \text{D}$$

$$\sqrt{256} = \square \rightarrow \text{W}$$

$$\sqrt{49} = \square \rightarrow \text{S}$$

$$\sqrt{361} = \square \rightarrow \text{P}$$

$$\sqrt{25} = \square \rightarrow \text{N}$$

$$\sqrt{289} = \square \rightarrow \text{I}$$

$$\sqrt{16} = \square \rightarrow \text{T}$$

$$\sqrt{9} = \square \rightarrow \text{Y}$$

$$\sqrt{324} = \square \rightarrow \text{H}$$

$$\sqrt{400} = \square \rightarrow \text{R}$$

$$\sqrt{576} = \square \rightarrow \text{M}$$

$$\sqrt{64} = \square \rightarrow \text{O}$$

$$\sqrt{169} = \square \rightarrow \text{K}$$

Scratch space:

CLUE 3 Exponents

The duplication glitch doubled the stolen loot again and again. Write that repeated doubling as a power to count exactly how many copies spawned.

Solve each problem, then write its letter in every clue box that shows the same number.

A			A										A			
100	64	128	100	625	9	484	125	512	9	484	400	9	100	361	9	441
													A			
361	400	9	216	484	484	216	32	361	125	4	484	9	100	256		
128	125	125	16	9												

$10^2 = \square \rightarrow$ A	$3^2 = \square \rightarrow$ E	$22^2 = \square \rightarrow$ R	$2^4 = \square \rightarrow$ S
$2^2 = \square \rightarrow$ B	$8^2 = \square \rightarrow$ P	$20^2 = \square \rightarrow$ H	$4^4 = \square \rightarrow$ K
$8^3 = \square \rightarrow$ V	$5^4 = \square \rightarrow$ Y	$6^3 = \square \rightarrow$ I	$5^3 = \square \rightarrow$ O
$2^5 = \square \rightarrow$ G	$2^7 = \square \rightarrow$ L	$21^2 = \square \rightarrow$ D	$19^2 = \square \rightarrow$ T

Scratch space:

CLUE 4
Order of operations

The scoreboard hid a room number inside one long line of adds, multiplies, and brackets. Solve it in the correct order to find where the Game Master is held.

Solve each problem, then write its letter in every clue box that shows the same number.

E		E									E						
51	68	51	87	7	62	70	87	110	68	71	51	49	103	72	62	14	49

					E	E							E		
68	70	7	7	63	51	51	16	103	7	53	72	62	51	58	72

$16 + 7 \times 5 = \square \rightarrow \boxed{\text{E}}$

$11 \times 6 - 8 = \square \rightarrow \boxed{\text{N}}$

$28 + 8 \times 5 = \square \rightarrow \boxed{\text{L}}$

$35 + 3 \times 6 = \square \rightarrow \boxed{\text{Y}}$

$54 + 3 \times 6 = \square \rightarrow \boxed{\text{A}}$

$47 + 4 \times 6 = \square \rightarrow \boxed{\text{U}}$

$62 + 2 \times 4 = \square \rightarrow \boxed{\text{I}}$

$67 + 9 \times 4 = \square \rightarrow \boxed{\text{P}}$

$17 + 5 \times 9 = \square \rightarrow \boxed{\text{R}}$

$10 \times 12 - 10 = \square \rightarrow \boxed{\text{B}}$

$8 \times 12 - 9 = \square \rightarrow \boxed{\text{C}}$

$6 \times 5 - 23 = \square \rightarrow \boxed{\text{T}}$

$2 \times 8 - 2 = \square \rightarrow \boxed{\text{K}}$

$11 \times 8 - 25 = \square \rightarrow \boxed{\text{H}}$

$39 + 2 \times 5 = \square \rightarrow \boxed{\text{S}}$

$5 \times 4 - 4 = \square \rightarrow \boxed{\text{M}}$

Scratch space:

CLUE 5**Square roots - the last clue**

The last locked door shows only a squared code on its panel. Take the square root, punch in the key, and corner the Glitch Phantom for good.

First solve each problem. Then find each answer in the numbered list below and cross that sentence out. One sentence will be left - that is exactly what the villain did!

Step 1 - solve these:

$\text{sqrt}(36) = \boxed{}$

$\text{sqrt}(64) = \boxed{}$

$\text{sqrt}(49) = \boxed{}$

$\text{sqrt}(100) = \boxed{}$

$\text{sqrt}(9) = \boxed{}$

$\text{sqrt}(1) = \boxed{}$

$\text{sqrt}(144) = \boxed{}$

$\text{sqrt}(16) = \boxed{}$

$\text{sqrt}(4) = \boxed{}$

$\text{sqrt}(81) = \boxed{}$

$\text{sqrt}(25) = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain vanishes under a stealth cloak, then locks aim onto every target.
2. The villain lands a perfect headshot, then clips through solid walls.
3. The villain bashes straight through shields, then clips through solid walls.
4. The villain lands a perfect headshot, then duplicates rare loot endlessly.
5. The villain dashes across the map in seconds, then duplicates rare loot endlessly.
6. The villain chains an endless combo, then locks aim onto every target.
7. The villain lands a perfect headshot, then flies through the ceiling with no clip.
8. The villain dashes across the map in seconds, then locks aim onto every target.
9. The villain vanishes under a stealth cloak, then flies through the ceiling with no clip.
10. The villain chains an endless combo, then clips through solid walls.
11. The villain dashes across the map in seconds, then clips through solid walls.
12. The villain bashes straight through shields, then flies through the ceiling with no clip.

Answer Key

Case of the Glitch Phantom

Culprit: NeonNyx

Speedrun dash · Wall clip · plays on keyboard · electric blue glow · overheats fast

Trail: Start 21 → Clue 1 18 → Clue 2 11 → Clue 3 5 → Clue 4 4 → Clue 5 1

Clue 1 (Pythagorean theorem): "THE VILLAIN CANNOT LAG SWITCH"

legs 12 and 35, hypotenuse = 37 (T) · legs 15 and 36, hypotenuse = 39 (V) · legs 16 and 30, hypotenuse = 34 (A) · legs 20 and 21, hypotenuse = 29 (E) · legs 28 and 96, hypotenuse = 100 (I) · legs 25 and 60, hypotenuse = 65 (N) · legs 24 and 45, hypotenuse = 51 (L) · legs 9 and 40, hypotenuse = 41 (C) · legs 35 and 120, hypotenuse = 125 (W) · legs 8 and 15, hypotenuse = 17 (O) · legs 12 and 16, hypotenuse = 20 (S) · legs 6 and 8, hypotenuse = 10 (G) · legs 18 and 80, hypotenuse = 82 (H)

Clue 2 (Square roots): "A WITNESS SAW THE PHANTOM PLAY ON KEYBOARD"

$\sqrt{625} = 25$ (A) · $\sqrt{225} = 15$ (E) · $\sqrt{441} = 21$ (L) · $\sqrt{144} = 12$ (B) · $\sqrt{4} = 2$ (D) · $\sqrt{256} = 16$ (W) · $\sqrt{49} = 7$ (S) · $\sqrt{361} = 19$ (P) · $\sqrt{25} = 5$ (N) · $\sqrt{289} = 17$ (I) · $\sqrt{16} = 4$ (T) · $\sqrt{9} = 3$ (Y) · $\sqrt{324} = 18$ (H) · $\sqrt{400} = 20$ (R) · $\sqrt{576} = 24$ (M) · $\sqrt{64} = 8$ (O) · $\sqrt{169} = 13$ (K)

Clue 3 (Exponents): "A PLAYER OVERHEATED THEIR RIG TO BREAK LOOSE"

$10^2 = 100$ (A) · $3^2 = 9$ (E) · $22^2 = 484$ (R) · $2^4 = 16$ (S) · $2^2 = 4$ (B) · $8^2 = 64$ (P) · $20^2 = 400$ (H) · $4^4 = 256$ (K) · $8^3 = 512$ (V) · $5^4 = 625$ (Y) · $6^3 = 216$ (I) · $5^3 = 125$ (O) · $2^5 = 32$ (G) · $2^7 = 128$ (L) · $21^2 = 441$ (D) · $19^2 = 361$ (T)

Clue 4 (Order of operations): "ELECTRIC BLUE SPARKS LIT THE EMPTY ARENA"

$16 + 7 \times 5 = 51$ (E) · $11 \times 6 - 8 = 58$ (N) · $28 + 8 \times 5 = 68$ (L) · $35 + 3 \times 6 = 53$ (Y) · $54 + 3 \times 6 = 72$ (A) · $47 + 4 \times 6 = 71$ (U) · $62 + 2 \times 4 = 70$ (I) · $67 + 9 \times 4 = 103$ (P) · $17 + 5 \times 9 = 62$ (R) · $10 \times 12 - 10 = 110$ (B) · $8 \times 12 - 9 = 87$ (C) · $6 \times 5 - 23 = 7$ (T) · $2 \times 8 - 2 = 14$ (K) · $11 \times 8 - 25 = 63$ (H) · $39 + 2 \times 5 = 49$ (S) · $5 \times 4 - 4 = 16$ (M)

Clue 5 (Square roots): surviving statement is box 11 → NeonNyx

$\sqrt{36} = 6$ · $\sqrt{64} = 8$ · $\sqrt{49} = 7$ · $\sqrt{100} = 10$ · $\sqrt{9} = 3$ · $\sqrt{1} = 1$ · $\sqrt{144} = 12$ · $\sqrt{16} = 4$ · $\sqrt{4} = 2$ · $\sqrt{81} = 9$ · $\sqrt{25} = 5$